

IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (previously presented) A messaging system, comprising:
a client device;
a server; and
a protocol gateway adaptively arranged between at least two of a plurality of communication networks each communicating messages between said client device and said server with a plurality of differing wireless network protocols, said protocol gateway segmenting a message communicated with an underlying wireless network protocol into multiple segments, and said protocol gateway providing Transmission Control Protocol (TCP) functionality to said multiple segments communicated with a connectionless protocol through a layer of a peer protocol working in coordination with said connectionless protocol.
2. (canceled)
3. (previously presented) The messaging system according to claim 1, wherein said underlying wireless network protocol is comprised of a protocol stack that comprises:
an application layer mapped to layer 7 of said OSI model;
a network layer mapped to layer 3 of said OSI model;
a data link layer mapped to layer 2 of said OSI model; and
a physical layer mapped to layer 1 of said OSI model.

4. (previously presented) The messaging system according to claim 3, wherein:

said application layer comprises an interface between a client application and a simple network transport layer (SNTL); and

said client application is adapted to send and receive messages across said plurality of wireless networks without having any information of a communication implementation.

5. (previously presented) The messaging system according to claim 4, wherein:

said client application is selected from a group consisting of one or more e-mail applications, one or more file transfer applications, and a plurality of end user applications.

6. (previously presented) The messaging system according to claim 4, wherein:

said network layer comprises means for providing network protocol layer functionality and hiding details of said functionality from said SNTL.

7. (previously presented) The messaging system according to claim 6, wherein:

said network layer comprises an Internet Protocol (IP).

8. (previously presented) The messaging system according to claim 3, wherein:

said data link layer and said physical layer are together adapted to comply with a public switch telephone network protocol.

9. (previously presented) The messaging system according to claim 3, wherein:

said data link layer and said physical layer are together adapted to comply with a cellular digital packet data protocol.

10. (previously presented) The messaging system according to claim 3, wherein:

said data link layer and said physical layer are together adapted to comply with a Mobitex protocol.

11. (previously presented) The messaging system according to claim 3, wherein:

said data link layer and said physical layer are together adapted to comply with a RIM protocol.

12. (previously presented) The messaging system according to claim 3, wherein:

said data link layer and said physical layer are together adapted to comply with an ARDIS protocol.

13. (previously presented) The messaging system according to claim 3, wherein:

said data link layer and said physical layer are adapted to comply with a GPRS protocol.

14. (previously presented) The messaging system according to claim 3, wherein:

said data link layer and said physical layer are adapted to comply with a GSM protocol.

15. (previously presented) The messaging system according to claim 3, wherein:

said data link layer and said physical layer are adapted to comply with said selected wireless network protocol.

16. (previously presented) The messaging system according to claim 3, wherein:

said data link layer and said physical layer are adapted to comply with a wireless network protocol selected from a group comprising a public switch telephone network protocol, a cellular digital packet data protocol, a Mobitex protocol, an ARDIS protocol, a RIM protocol, a GPRS protocol, and a GSM protocol.

17. (previously presented) The messaging system according to claim 4, wherein:

said SNTL includes a connectionless UDP-like transport protocol having substantially all features and advantages of TCP.

18. (previously presented) The messaging system according to claim 17, wherein:

said features are selected from a group comprising message segmentation, message segment reassembly, message retries, and message duplication.

19. (previously presented) The messaging system according to claim 17, wherein:

said SNTL includes a transport header having a preselected width.

20. (previously presented) The messaging system according to claim 19, wherein:

said preselected width comprises between four to six bytes.

21. (previously presented) The messaging system according to claim 19, further comprising:

a single segment message header.

22. (previously presented) The messaging system according to claim 19, further comprising:

a multiple segment message header.

23. (previously presented) The messaging system according to claim 19, wherein said transport header further comprises:

a first field adapted to indicate a version number of a segment header;

a second field adapted to indicate a message identification value, adapted to discard segment/message duplications and to match acknowledgments with messages;

a third field adapted to indicate protocol information;

a fourth field adapted to indicate a total number of bytes contained in a message segment to be sent including said segment header; and

a fifth field adapted to indicate a number of each said message segment.

24. (previously presented) The messaging system according to claim 23, wherein:

said first field comprises two bits.

25. (previously presented) The messaging system according to claim 23, wherein:

said first field comprises bit 0 and bit 1 of a first word in said segment header.

26. (previously presented) The messaging system according to claim 23, wherein:

said first field comprises a value of from 0 to 3.

27. (previously presented) The messaging system according to claim 23, wherein:

said second field comprises thirteen bits.

28. (previously presented) The messaging system according to claim 23, wherein:

said second field comprises bits 2 through 14 of a first word in said segment header.

29. (previously presented) The messaging system according to claim 23, wherein:

said second field comprises a value of from 0 to 8,192.

30. (previously presented) The messaging system according to claim 23, wherein:

said third field comprises five bits.

31. (previously presented) The messaging system according to claim 23, wherein:

said third field comprises bits 15 through 19 of a first word in said segment header.

32. (previously presented) The messaging system according to claim 23, wherein:

bit 19 of said third field comprises a value indicative of message segmentation.

33. (previously presented) The messaging system according to claim 32, wherein:

bit 19 comprises a value of 0 when said message is not segmented.

34. (previously presented) The messaging system according to claim 32, wherein:

bit 19 comprises a value of 1 when said message is segmented.

35. (previously presented) The messaging system according to claim 23, wherein:

bit 16 of said third field comprises a value indicative of a message type.

36. (previously presented) The messaging system according to claim 35, wherein:

bit 16 comprises a value of 0 when said message includes a positive acknowledgment.

37. (previously presented) The messaging system according to claim 35, wherein:

bit 16 comprises a value of 1 when said message includes a negative acknowledgment.

38. (previously presented) The messaging system according to claim 23, wherein:

bit 15 of said third field comprises a message indicator.

39. (previously presented) The messaging system according to claim 38, wherein:

bit 15 comprises a value of 0 when said message is an application message.

40. (previously presented) The messaging system according to claim 38, wherein:

bit 15 comprises a value of 1 when said message is a system message.

41. (previously presented) The messaging system according to claim 23, wherein:

said fourth field comprises twelve bits.

42. (previously presented) The messaging system according to claim 41, wherein:

said fourth field comprises bits 20 through 31 of a second word in said segment header.

43. (previously presented) The messaging system according to claim 42, wherein:

said fourth field comprises a value of from 4 to 4,096.

44. (previously presented) The messaging system according to claim 23, wherein:

said fifth field comprises eight bits.

45. (previously presented) The messaging system according to claim 44, wherein:

said fifth field comprises bits 0 through 7 of a third word in said segment header.

46. (previously presented) The messaging system according to claim 44, wherein:

said fifth field comprises a value of from 2 to 255.

47. (previously presented) The messaging system according to claim 23, wherein:

said fifth field is adapted to re-order a plurality of message segments into a single complete message.

48. (previously presented) A messaging method, comprising:
communicating messages between a client application and a server application over a plurality of communication networks each communicating said messages between said client device and said server with a plurality of differing wireless network protocols;

segmenting with said protocol gateway a message communicated with an underlying wireless network protocol into multiple segments; and

adding with said protocol gateway Transmission Control Protocol (TCP) functionality to said multiple segments communicated with a connectionless protocol through a layer of a peer protocol working in coordination with said connectionless protocol.

49. (previously presented) The messaging method according to claim 48, further comprising:

a simple network transport layer (SNTL) that maps to layer 4 of said OSI model.

50. (previously presented) The messaging method according to claim 48, wherein said underlying wireless network protocol is comprised of a protocol stack that comprises:

an application layer mapped to layer 7 of said OSI model;
a network layer mapped to layer 3 of said OSI model;
a data link layer mapped to layer 2 of said OSI model; and
a physical layer mapped to layer 1 of said OSI model.

51. (previously presented) The messaging method according to claim 50, wherein:

said application layer comprises an interface between a client application and a simple network transport layer (SNTL); and

said client application is adapted to send and receive messages across said plurality of wireless networks without having any information of a communication implementation.

52. (previously presented) The messaging method according to claim 51, wherein:

said client application is selected from a group consisting of one or more e-mail applications, one or more file transfer applications, and a plurality of end user applications.

53. (previously presented) The messaging method according to claim 50, wherein:

said network layer comprises means for providing network protocol layer functionality and hiding details of said functionality from a simple network transport layer (SNTL).

54. (previously presented) The messaging method according to claim 53, wherein:

said network layer comprises an Internet Protocol (IP).

55-61. (canceled)